

PATENT ABSTRACTS OF JAPAN

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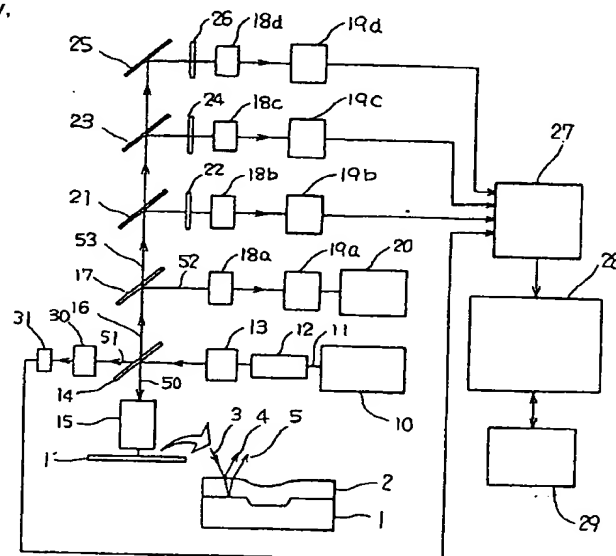
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(54) MEASURING METHOD OF DISTRIBUTION OF FILM THICKNESS AND APPARATUS THEREFOR

(57)Abstract:

PURPOSE: To measure the distribution of the thickness of a film such as a photoresist in a minute area at high speed and with high accuracy, by a method wherein a two-dimensional interference pattern generated by inner-film interference is separated into wavelength components in the number of N and each component is detected separately from others.

CONSTITUTION: A light 11 emitted from an Ar laser 10 is separated 14 into ones going on optical paths 50 and 51 respectively. When the separated light going on the optical path 50 is applied onto a wafer 1 of a photoresist 2, a reflected light 4 from the surface thereof and a reflected light 5 from the interface between the photoresist 2 and a ground substrate 1 interfere with each other and a two-dimensional interference pattern is generated therefrom. This pattern is detected by an objective lens 15 and then separated 17 into those going on optical paths 52 and 53 respectively. The separated interference pattern going on the optical path 53 is subjected to wavelength separation into interference patterns relating to three wavelength components by a wavelength selecting optical system A, and they are imaged on two-dimensional solid-state image sensing elements 19bW19d respectively. The intensity of the interference at each point of these two-dimensional interference patterns is referenced with the relationship between a film thickness and interference which is introduced beforehand and wherein the three wavelengths are parameters, and a two-dimensional distribution of the film thickness is determined finally therefrom.



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